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 (21) International Application Number: PCT/US (22) International Filing Date: 16 November 1999 ((30) Priority Data: 09/197,809 23 November 1998 (23.11.9) (71) Applicant: HEALTHSHIELD TECHNOLOGIE [US/US]; Suite 201, 67 Prospect Avenue, West 1 CT 06106 (US). (72) Inventors: TROGOLO, Jeffrey, A.; 228 Commonwe enue, Boston, MA 02116 (US). BARRY, John Drake Lane, Derry, NH 03038 (US). HOLLEY, 24 Bigelow Street, Brighton, MA 02135 (US). (74) Agents: GOGORIS, Adda, C. et al.; Darby & Darby F 	8) US LL Hartfor	BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES FI, GB, GD, GE, HR, HU, ID, IL, IN, IS, JP, KE, KG, KF KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAP patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR NE, SN, TD, TG). Published With international search report. (88) Date of publication of the international search
Third Avenue, New York, NY 10022-7513 (US).		

(54) Title: ANTIMICROBIAL FABRIC AND MEDICAL GRAFT OF THE FABRIC

(57) Abstract

A medical graft, such as a vascular graft, made of a fabric containing an inorganic antimicrobial agent. The fabric has a coating material with the inorganic antimicrobial agent bonded to it, the agent preferably being a zeolite. The fabric can be porous so as to permit tissue to grow on it with the fabric pores providing attachment sites for the tissue. Alternatively, the fabric can be coated with a tissue biocompatible material, such as collagen. A porous fabric applicable for the graft, and for other medical uses, and a method of manufacturing the porous fabric having a coating thereon to which is bonded an antimicrobial agent, such as a zeolite, also is provided. The fabric is antimicrobial, remains pliable, and is also porous.

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INTERNATIONAL SEARCH REPORT

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CLASSIFICATION OF SUBJECT MATTER PC 7 A61L27/54 A61L A61L31/16 D06M16/00 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 A61L D06M Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ C. DOCUMENTS CONSIDERED TO BE RELEVANT Category 1 Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. A US 4 525 410 A (HAGIWARA ZENJI ET AL) 23-32 25 June 1985 (1985-06-25) column 1, line 56 -column 2, line 5 column 3, line 33 - line 40 column 5, line 38 - line 66 examples US 5 003 638 A (MIYAKE TERUYOSHI ET AL) 1-32 2 April 1991 (1991-04-02) column 1, line 24 - line 25 column 5, line 44 -column 6, line 8 A US 4 906 466 A (EDWARDS NEIL ET AL) 1-22 6 March 1990 (1990-03-06) column 2, line 38 - line 46 column 4, line 64 -column 5, line 4 -/--X Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the "A" document defining the general state of the art which is not considered to be of particular relevance invention *E" earlier document but published on or after the International "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-"O" document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled in the art. document published prior to the international filing date but later than the priority date claimed *&* document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 26 June 2000 10/07/2000 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentiaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 spc ni, Cousins-Van Steen, G Fex: (+31-70) 340-3016

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	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 116 865 A (KANEBO LTD ; KANTO KAGAKU (JP)) 29 August 1984 (1984-08-29) & US 4 775 585 A 4 October 1988 (1988-10-04) cited in the application	
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information on patent family members

Inti. Jonal Application No PCT/US 99/27190

D-11-1			<u> </u>	PC1/US	99/2/190
Patent document cited in search report	٠.	Publication date		Patent family member(s)	Publication date
US 4525410	Α	25-06-1985	JP	1390178 C	23-07-1987
			JP	59037956 A	01-03-1984
			JP	61022977 B	03-06-1986
		•	CA	1225584 A	18-08-1987
			DE	3378673 D	19-01-1989
			EP	0103214 A	21-03-1984
US 5003638	Α	02-04-1991	JP	3199403 A	30-08-1991
			KR	9201924 B	07-03-1992
US 4906466	Α	06-03-1990	AT	87794 T	15-04-1993
			AU	599995 B	02-08-1990
		•	AU	7505487 A	07-01-1988
			DE	3785253 D	13-05-1993
			DE	3785253 T	12-08-1993
			EP	0251783 A	07-01-1988
			ES	2054673 T	16-08-1994
			FI	872964 A,B,	04-01-1988
			JP	8005767 B	24-01-1996
			JP	63088109 A	19-04-1988
			NO	174732 B	21-03-1994
			NZ US	220918 A	28-11-1989
				5413788 A	09-05-1995
EP 0116865	Α	29-08-1984	JP	1729959 C	29-01-1993
			JP	59133235 A	31-07-1984
			JP	63054013 B	26-10-1988
			AU	549375 B	23-01-1986
			CA	1253992 A	09-05-1989
			DE	3461240 D	02-01-1987
			US	4775585 A	04-10-1988
			US	4911899 A	27-03-1990
			US	4911898 A	27-03-1990